Complete Summary

GUIDELINE TITLE

Carpal tunnel syndrome.

BIBLIOGRAPHIC SOURCE(S)

Work Loss Data Institute. Carpal tunnel syndrome. Corpus Christi (TX): Work Loss Data Institute; 2005. 154 p. [207 references]

GUIDELINE STATUS

This is the current release of the guideline.

This guideline updates a previous version: Work Loss Data Institute. Carpal tunnel syndrome. Corpus Christi (TX): Work Loss Data Institute; 2005. 144 p.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Work-related carpal tunnel syndrome

GUIDELINE CATEGORY

Diagnosis
Evaluation
Treatment

CLINICAL SPECIALTY

Family Practice
Internal Medicine

Neurology
Orthopedic Surgery

INTENDED USERS

Advanced Practice Nurses
Health Care Providers
Health Plans
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

To offer evidence-based step-by-step decision protocols for the assessment and treatment of workers' compensation conditions

TARGET POPULATION

Workers with occupational carpal tunnel syndrome

INTERVENTIONS AND PRACTICES CONSIDERED

The following interventions/procedures were considered and recommended as indicated in the original guideline document:

1. Aerobic exercise
2. Assessment of night pain symptoms/nocturnal paresthesias
3. Assessment of thumb abduction strength
4. Braces/Splinting
5. Breaks (microbreaks)
6. Carpal tunnel release surgery
7. Cold packs
8. Comorbidities assessment
9. Corticosteroid injections
10. Diagnostic ultrasound
11. Differential diagnosis
12. Durkan's compression test
13. Electrodiagnostic studies
14. Endoscopic surgery
15. Flick sign (shaking hand) in diagnostic assessment
16. Hand and wrist exercises
17. Heat therapy after initial cold packs
18. Hypalgesia (in the median nerve territory in diagnostic assessment)
19. Katz hand diagram scores
20. Physical therapy/Occupational therapy
21. Psychosocial management
22. Return to work
23. Semmes-Weinstein monofilament test
24. Static 2-point discrimination (>6 millimeters)
25. Thenar atrophy assessment

26. Yoga

The following interventions/procedures are under study and are not specifically recommended:

1. Arnica
2. Avoidance of computer mouse use
3. Chiropractic/Manipulation
4. Insulin
5. Iontophoresis
6. Mobilization
7. Nerve/Tendon gliding exercises
8. Nonprescription medications, such as acetaminophen
9. Oral corticosteroids
10. Phonophoresis
11. Psychosocial assessment for depression
12. Therapeutic ultrasound

The following interventions/procedures were considered, but are not currently recommended:

1. Acupuncture
2. Assessment of wrist pain
3. Biofeedback
4. Closed fist sign
5. Diuretics
6. Gel-padded glove
7. Hypnosis
8. Laser acupuncture
9. Low-level laser therapy
10. Magnets/Magnet therapy
11. Magnetic resonance imaging
12. Non-steroidal anti-inflammatory drugs (NSAIDs) as first-line therapy
13. Phalen's test
14. Square wrist sign in diagnostic assessment
15. Therapeutic touch
16. Tinel's sign in diagnostic assessment
17. Tourniquet test
18. Transcutaneous electrical neurostimulation (TENS)
19. Vitamin B supplementation

MAJOR OUTCOMES CONSIDERED

- Sensitivity and specificity of diagnostic tests
- Effectiveness of treatments for relief of pain and symptoms

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

Not stated

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Ranking by quality within type of evidence:

a. High Quality
b. Medium Quality
c. Low Quality

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Not applicable

COST ANALYSIS

The guideline developers reviewed published cost analyses.

METHOD OF GUIDELINE VALIDATION

Not stated

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not applicable

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Initial Diagnosis

- First visit: with Primary Care Physician MD/DO (100%)
- Determine severity:
    - Mild/moderate (Go to Initial Conservative Treatment):
        - Symptoms: pain/numbness in hand/wrist/forearm, below the elbow, with tingling that is primarily in thumb, index, and long finger (Katz hand diagram and hypethesia index finger compared to little finger), with nocturnal awakening, impaired dexterity, and having to shake the hand for relief (Flick sign)
        - Tests: Phalen's/Tinel's signs positive (not always useful), decreased sensitivity by 2-point discrimination test (moving versus static) for hypalgesia. Also consider Semmes Weinstein monofilament test, Durkan's pressure provocation test, closed fist sign, square fist sign (see Table, "Sensitivity and Specificity of Diagnostic Tests for Carpal Tunnel Syndrome Measured Against Nerve Conduction Studies" in the original guideline document).
        - Muscle atrophy: Mild weakness of thenar muscles (thumb abduction)
        - Recommended: findings that best distinguish between patients with electrodiagnostic evidence of carpal tunnel syndrome (CTS) and patients without it are hypalgesia in the median nerve territory (likelihood ratio 3.1), classic or probable Katz hand diagram results (likelihood ratio 2.4), and weak thumb abduction strength (likelihood ratio 1.8). See Table, "Sensitivity and Specificity of Diagnostic Tests for Carpal Tunnel Syndrome Measured Against Nerve Conduction Studies" in the original guideline document
        - History/exam, comorbidities: diabetes, hypothyroidism, rheumatoid arthritis, obesity, hypertension, inactivity, age
        - Concurrent pregnancy: CTS likely to resolve on its own within 6 to 12 weeks after delivery
    - Severe (Go Directly to Electrodiagnostic Testing)
        - Muscle atrophy: severe weakness of thenar muscles
        - Test: 2-point discrimination over 6 millimeters
- Rule out diagnoses (See other treatment parameters for each of these):
    - Cervical radiculopathy (refer to the original guideline document for relevant ICD-9 codes for CTS and other diagnoses)
    - Tendonitis
    - Osteoarthritis
    - Thoracic outlet syndrome, brachial plexus disorders

Mild/Moderate -- Initial Conservative Treatment (70% of cases)

- Also first visit (day 1):
    - Prescribe alteration of activity (home and work), frequent breaks, stretching, night and possibly day splint, appropriate analgesia (i.e., acetaminophen) [Benchmark cost: $14], back to work--modified duty if condition caused by job, possible ergonomic evaluation of job, patient education

Official Disability Guidelines (ODG) Return-To-Work Pathways

Conservative treatment, modified work (no repetitive use of hand/wrist): 0 days

Conservative treatment, regular work (if not cause of or aggravating to disability/use of splint): 0-5 days

(See ODG Capabilities & Activity Modifications for Restricted Work under "Work" in the Procedure Summary of the original guideline document)

- Second visit (day 7-14--about 2 weeks after first visit)
    - Document progress
    - If not significantly improved then may (approximately 50% of cases) prescribe physical therapy for home exercise training [Benchmark cost: $250]: Refer to Physical Therapist (50%) or Occupational Therapist (50%) for 3 visits per week for 2 weeks
- Third visit (day 28--about 1 month after first visit)
    - Document progress
    - Corticosteroid injection trial (high likelihood of relief, but may have recurrence of symptoms within several months--initial relief of symptoms good indicator for success of surgery, can assist in confirmation of diagnosis) [Benchmark cost: $276]. Should be performed by musculoskeletally trained physician
    - If prescribe therapy, then continue therapist, change from passive to active modality, 2 visits per week, teach home exercises
    - Vitamin B_6 therapy has been successful if deficient, but is controversial
    - Ultrasound therapy has been successful, but there are few studies

ODG Return-To-Work Pathways

Conservative treatment, regular work (if work related): 28 days

Conservative treatment, regular work (with severe nerve impairment): indefinite

- Fourth visit (day 42--about 6 weeks after first visit)
    - Refer for Electrodiagnostic Testing

Electrodiagnostic Testing (50% of cases)
[Benchmark cost: $370]

- All severe cases, plus mild/moderate cases after Initial Conservative Treatment above
- Refer to Neurologist (70%) or Physical Medicine (30%) specialists certified in electrodiagnostic medicine, for electromyography (EMG)/Nerve Conduction Studies, the "gold standard" tests for the evaluation of CTS.
- Positive test: refer for Carpal Tunnel Release depending on severity

Carpal Tunnel Release (35% of cases)

(See also ODG Indications for Surgery™ -- Carpal Tunnel Release in the Procedure Summary in the original guideline document)
[Benchmark cost: $2,621]

- Only after the positive diagnosis of CTS is made by history, physical examination, and electrodiagnostic studies
- Performed by Hand Surgeon: Orthopaedic Surgeon (75%), Neurosurgeon (10%), Plastic Surgeon (10%), or General Surgeon (5%)
- On an outpatient basis
- May be open or endoscopic, depending on experience of surgeon
- If bilateral (25% of cases), schedule separate surgeries (usually)
- Expected outcome:
    - Mild/moderate cases: over 90% success with complete recovery after failure of Initial Conservative Treatment (Outcomes in workers' comp cases may not be as good as outcomes overall, but still support surgery.)
    - Severe cases: Complete recovery is unlikely, but 90% will benefit from at least partial recovery.
- Post-surgical treatment:
    - Splint - day and night: not recommended
    - Stitches out in 5 to 10 days
    - Physical/Occupational Therapy: A short course may be needed; if so, then post-surgical treatment (endoscopic): 14 visits over 8 weeks; post-surgical treatment (open): 20 visits over 10 weeks

ODG Return-To-Work Pathways

Endoscopic surgery, modified work: 3-5 days

Endoscopic surgery, regular work, non-dominant arm: 14-28 days

Endoscopic surgery, regular/repetitive/heavy manual work, dominant arm: 28 days to indefinite

Open surgery, mini palm technique, modified work: 3-5 days

Open surgery, mini palm technique, regular work, non-dominant arm: 14-28 days

Open surgery, mini palm technique, regular/repetitive/heavy manual work, dominant arm: 56 days to indefinite

Open surgery, traditional approach, modified work: 14 days

Open surgery, traditional approach, regular work, non-dominant arm: 42 days

Open surgery, traditional approach, regular/repetitive/heavy manual work, dominant arm: 28 days to indefinite

- Failed Carpal Tunnel Release (4% of cases):
  - Repeat Electrodiagnostic Testing
  - Repeat Carpal Tunnel Release (by fellowship-trained Hand Surgeon)

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

During the comprehensive medical literature review, preference was given to high quality systematic reviews, meta-analyses, and clinical trials over the past ten years, plus existing nationally recognized treatment guidelines from the leading specialty societies.

The type of evidence associated with each recommended or considered intervention or procedure is ranked in the guideline's annotated reference summaries.

Ranking by Type of Evidence:

1. Systematic Review/Meta-Analysis
2. Controlled Trial-Randomized (RCT) or Controlled
3. Cohort Study-Prospective or Retrospective
4. Case Control Series
5. Unstructured Review
6. Nationally Recognized Treatment Guideline (from www.guideline.gov)
7. State Treatment Guideline
8. Foreign Treatment Guideline
9. Textbook
10. Conference Proceedings/Presentation Slides

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

These guidelines unite evidence-based protocols for medical treatment with normative expectations for disability duration. They also bridge the interests of the many professional groups involved in diagnosing and treating carpal tunnel syndrome.

POTENTIAL HARMS

Not stated

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better

IOM DOMAIN

Effectiveness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2003 (revised 2005)

GUIDELINE DEVELOPER(S)

Work Loss Data Institute - Public For Profit Organization

SOURCE(S) OF FUNDING

Not stated

GUIDELINE COMMITTEE

Not stated

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Not stated

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

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GUIDELINE AVAILABILITY

Electronic copies: Available to subscribers from the Work Loss Data Institute Web site.

Print copies: Available from the Work Loss Data Institute, 169 Saxony Road, Suite 210, Encinitas, CA 92024; Phone: 800-488-5548, 760-753-9992, Fax: 760-753-9995; www.worklossdata.com.

AVAILABILITY OF COMPANION DOCUMENTS

Background information on the development of the Official Disability Guidelines of the Work Loss Data Institute is available from the Work Loss Data Institute Web site.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on February 2, 2004. The information was verified by the guideline developer on February 13, 2004. This NGC summary was updated by ECRI on March 24, 2005, and January 3, 2006.

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